### (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

# (19) World Intellectual Property Organization International Bureau



## (43) International Publication Date 21 October 2004 (21.10.2004)

#### PCT

# (10) International Publication Number WO 2004/090387 A1

(51) International Patent Classification7: F16H 61/32

(21) International Application Number:

PCT/JP2004/004571

(22) International Filing Date: 30 March 2004 (30.03.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

2003-101980

4 April 2003 (04.04.2003) JP

2003-301547 26 August 2003 (26.08.2003) J

(71) Applicant (for all designated States except US): TOY-OTA JIDOSHA KABUSHIKI KAISHA [JP/JP]; 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP).

(72) Inventors; and

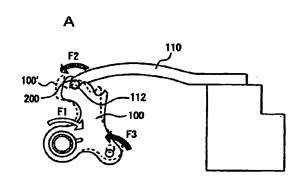
(75) Inventors/Applicants (for US only): AMAMIYA.

Sumiko [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP). OZEKI, Tatsuya [JP/JP]; c/o TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP). KAMIO, Shigeru [JP/JP]; c/o DENSO CORPORATION, 1-1, Showa-cho, Kariya-shi, Aichi 4488661 (JP). NAKAI, Yasuhiro [JP/JP]; c/o DENSO CORPORATION, 1-1, Showa-cho, Kariya-shi, Aichi 4488661 (JP). ITOH, Taku [JP/JP]; c/o DENSO COR-PORATION, 1-1, Showa-cho, Kariya-shi, Aichi 4488661 (JP). KAWAGUCHI, Kazuo [JP/JP]; c/o TOYOTA COM-MUNICATION SYSTEMS CO., LTD., 1-26-12, Aoi, Higashi-ku, Nagoya-shi, Aichi 4610004 (JP). SHIMIZU, Yasuo [JP/JP]; c/o DAIICHI SYSTEM ENGINEERING CO., LTD., 4F, GAZA-Building, 1-140, Kitamachi, Toyota-shi, Aichi 4710027 (JP).

(74) Agents: FUKAMI, Hisao et al.; Fukami Patent Office, Mitsui Sumitomo Bank Minamimorimachi Bldg., 1-29, Minamimorimachi 2-chome, Kita-ku, Osaka-shi, Osaka 5300054 (JP).

[Continued on next page]

(54) Title: SHIFT CONTROL SYSTEM, SHIFT CONTROL METHOD AND SHIFT SWITCHING DEVICE



(57) Abstract: A shift control system rotates an actuator to cause a wall of a detent plate (100) to contact a roller (112) of a detent spring (110), and detects the position of contact so as to detect the position of the wall of the detent plate (100). This wall position is set as a reference position of the actuator. Accordingly, the rotation of the actuator can appropriately be controlled even if an encoder which can only detect relative positional information is employed, and thus the shift range can appropriately be switched.

